

Pencils

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THE HISTORY

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LEAD PENCIL

BY

WALTON DAY

Price 10 Cents



PUBLISHED BY THE

JOS. DIXON CRUCIBLE COMPANY

JERSEY CITY, N. J.

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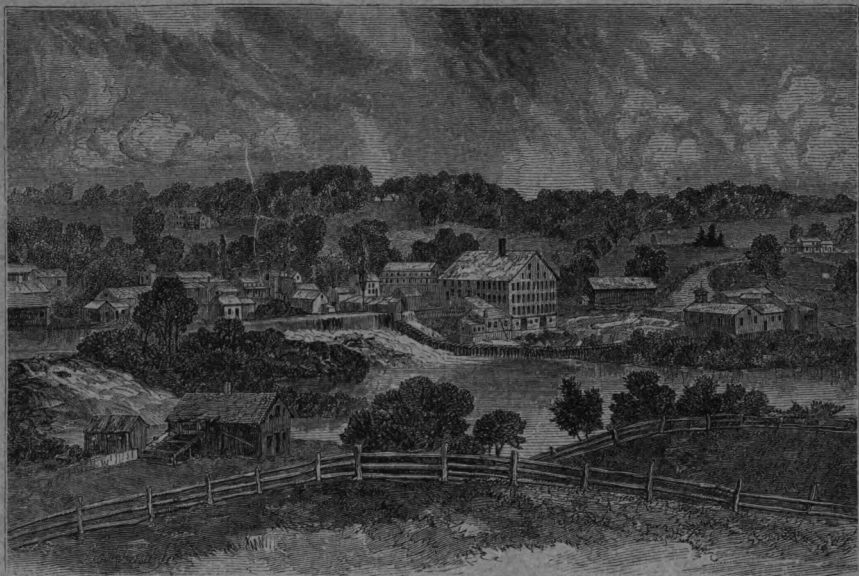
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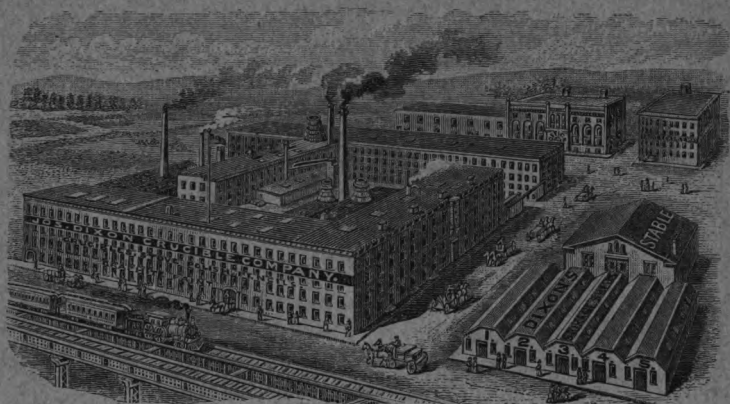


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Graphite Mines and Mills of the Joseph Dixon Crucible Company,
Ticonderoga, N. Y.



Works and General Offices of the Joseph Dixon Crucible Company,
Jersey City, N. J.



Rafting cedar logs to the Dixon Mill at Crystal River, Fla.

THE HISTORY OF A LEAD PENCIL.

BY WALTON DAY.



JOSEPH DIXON,

Founder of the Joseph Dixon Crucible Co.

TAKE THAT PENCIL OUT OF YOUR POCKET, or from off your desk, and look at it. Formulate, if you can, the history of it, from the digging of the graphite, which makes the part known as the "lead," and from the cutting down of the cedar-tree which furnishes the case, to the finish of the pencil proper and its delivery to you and to thousands of other business men for daily use. If you know this history step by step, and if you are prepared to judge of the grade and quality of pencils by reason of your knowledge of what they are composed, of how they are made, and of how they are finished, you have no reason to read what follows. If, on the other hand, you are unable

to tell the history of a lead pencil, from its prime elements to its delivery ready for use, or, to bring the question still nearer home, if you have failed to obtain pencils of the exact grade that you want for a certain purpose, then you will perhaps find interest in what follows. My sole object in telling the story of the "American Graphite" pencil is to give you the ability to buy your pencils intelligently, and to secure for your use

that particular grade of lead and that quality of finish most satisfactory for your purpose.

The lead pencil is of comparatively recent origin. To-day pencils are so common that they are very frequently given away, and the enterprising advertiser often asks you, as a favor to him, to lay aside the pencils that you have bought and to accept as a gift the same kind and grade bearing his card. Comparatively speaking, only a brief period has elapsed since pencils were rarities; when to have a pencil was a distinction, and when to have more than one pencil at a time was absolute extravagance. For myself, I can remember the first lead pencil I ever had. I remember, too, how previously I had been taught to make marks upon paper with a piece of soft lead hammered out into the semblance of a pencil, called a "plummet;" and I well remember how great an improvement even this crude



thing was over the slate and slate pencil to which my earlier efforts at writing and drawing had been confined. And then came the first lead pencil I ever owned — crude and rough, one would say if he could compare it with the finely finished article of the present day; but nevertheless a lead pencil with wood casing, attractively finished, a real, made pencil.

And there were pencils and pencils even in those days. There were pencils that answered a fairly satisfactory purpose for the school-boy and the business man, and then there were pencils of the higher grades, of better finish, which were reserved for important occasions and for draftsmen or artists. One of the bitterest disappointments — I may say, one of the severest trials — I ever experienced in my younger life, as I may describe it, was losing a pencil of the better grade that had never been sharpened:

a pencil that had a bright red finish with a gilt stamp, a pencil that was left behind in one of those seasons of moving which overtake even the best regulated families. I remember that pencil as I remember almost nothing else connected with my childhood. The grief, the disappointment, yes, the almost abject despair when I found that the pencil had been left behind, and that I was not to have the use of what I had saved and kept and was looking forward to with all the hope of an enthusiastic



boy, is something I shall never forget. How changed are things at the present time! Now we see boys whittling pencils on the street, for lack of a better stick upon which to use their jack-knives. We have pencils thrown at us from every side; and from various points of view it would seem that there is nothing so cheap and so common, and withal so useful, as a pencil. But to-day, as in the past, there are good pencils and poor pencils, dear pencils and cheap pencils, satisfactory pencils and unsatisfactory pencils. I propose at this time to talk about the "Dixon American Graphite Pencils," a line of pencils which, in my own experience, I have come to like better than any other; a line of pencils which have been successfully introduced against prejudices unequalled in any other line of trade, and pencils which have come up from a small beginning to constitute one of the great industries of the land.



Several points are to be considered in selecting a pencil for any given purpose, and to these it is only proper that I should give special attention in this connection, for I imagine that I am placing before the reader some facts about pencils to which his attention has not been previously called. Local stationers keep what is demanded, not necessarily a full assortment of what is made. They supply what is asked for. They seldom lead the trade by showing new varieties and grades. Therefore if I

give the reader an idea of what is available, what is comprised in the entire line, he will be in position to order intelligently, whether a sample is before him or not. It is the pride of the Joseph Dixon Crucible Company that every kind, grade, and finish of pencil that is demanded for any purpose whatever is made by them.

Let me describe a pencil in its various features. First, as to length: The normal length of a pencil is 7 inches, and yet for special purposes pencils are made both shorter and longer than 7 inches. Of the former may be mentioned the pocket pencil furnished with a metal protector



carrying a rubber. Another example of short length is the "Programme" pencil, and still another the "Memorandum Book" pencil, both being made small for the special uses to which they are devoted. Of the latter—that is, of the ones longer than the normal size—may be mentioned certain grades of mechanics' pencils which, in some instances, are made nearly or quite double the usual length. A second variation to be noted is the shape of the pencil. In this the two leading features are round pencils and hexagon pencils. Special shapes besides these are also employed, among which may be mentioned oval pencils and those which



are six-sided, but which have each of two of the sides longer than the other four, commonly known as "beveled." Irrespective of their shape pencils differ in diameter, particularly of the round kind. The diameter of the ordinary commercial round article is a little more than $\frac{1}{4}$ inch, say $\frac{1}{4}\frac{1}{2}$ inch. Hexagon pencils measure scarcely $\frac{1}{4}$ inch from face to face, but pencils for various purposes, as, for example, ladies' use, are made much smaller, $\frac{3}{16}$ inch being a very common diameter, and for compass use a pencil as small as $\frac{1}{8}$ inch diameter is made. Again, pencils may be considered with respect to the finish of the wood composing

the casing. The first in this class which suggests itself is the natural color of the cedar wood. Second may be mentioned "satin" finish, a style originated by the Joseph Dixon Crucible Company and greatly admired by many users. Then there is what is known as the "maroon" finish and the "black" finish. These several finishes apply both to the round and to the hexagon shapes. Various other finishes are also possible, and are employed on special pencils. Then there is the staining of the cedar in process of manufacture, so that the wood in a sense corresponds to the color or finish that is put upon the outside. For example, a certain



class of round black-finished pencils appear to the user to be made of a different kind of wood from that employed in any other style. The difference is simply the staining in the process of manufacture. Cheap grades of pencils admit of various styles of finish not recognized in first-class articles. There is the red finish, the blue finish, and the ruby finish; the garnet finish and the raven finish, and last but not least a pencil in wood which is not finished at all. Along with the finish is to be considered the stamp which is applied to the pencil. This may be a simple indentation of type in the wood without color. The lettering may be of



bronze, or, as in the best grades of pencils, it is done with gold-leaf. Irrespective of the shape of the wood, the diameter of the pencil, the length of the pencil, the finish that is put upon the wood, or the way in which the stamping is done, is the grade or hardness of lead which the pencil carries. "Dixon's ^{American Graphite} Pencils," which represent the grade that is ordinarily demanded, are supplied in seven degrees of hardness of leads. These grades are indicated by the letters which appear upon the pencils in connection with the stamp, and which to many at first sight are mysterious. For the softest kind made "S," or "soft," is

used, corresponding to the old style No. 1, and then following in order are "S M," meaning "soft medium," corresponding with No. 2; "M B," "medium black," or old style No. 3; "M H," "medium hard," or old style No. 3½; "H," "hard," or old style No. 4; "V H," "very hard," or old style No. 5. "Dixon's American Graphite Artist's Pencils," on which the greatest possible care is exercised in the choice of materials and grading of leads, are made in ten degrees of hardness, and are intended for the special uses of artists and draftsmen. The grades include those mentioned above, and have as extremes "V V S," "very, very soft;" "V S,"



"very soft," and "V V H," "very, very hard." The latter in every way takes the place of the well-known "6 H" imported pencil.

The variations that are possible with the elements above enumerated—being variations in quality, in hardness of lead, in finish of the cedar casing, in the shape of the cedar casing, in the length of the pencil, and in the stamp that is put upon it, and also in the finish of the wood—are beyond enumeration in an article of this kind. The Joseph Dixon Crucible Company manufacture and carry in stock a total of some 500 varieties, to only a few of which can special attention be directed at this time. The



bookkeeper, for the small figures in his ledger, in taking off a trial balance, and in footing columns preparatory to entering the figures in ink, prefers a pencil with a comparatively hard lead, taking a long, sharp point and making a very fine figure. Again, the artist and draftsman require an assortment of grades in order to produce the effects that are desired in their work. For certain plans and sketches, imitating etchings, hard pencils are demanded; for other classes of work—for example, sketches resembling crayons—exceedingly soft pencils are necessary. The artist and draftsman then occupy middle ground, while at the other extreme are the

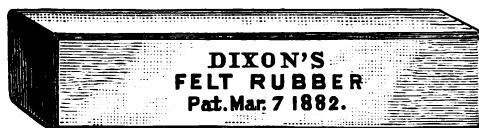
editor and reporter who, using soft paper, demand a pencil with a soft lead, and who prefer that pencil which makes the least possible friction when passing over the paper. The school-boy requires a medium soft pencil for the general work that falls to him to do, and the business man, with occasional entries in memorandum books, uses about the same grade. The stenographer also requires about the "S M" grade, although some take the "M;" and so I might particularize to the end of a considerable list.

Pencils are used as pencils and also as advertisements. When used



DIXON'S NOTEBOOK No 2 750

as pencils, quality of lead and character of finish, with shape and size, are points to be considered. When used as advertisements all these points receive consideration, but as of secondary importance, the prime consideration being the character of the finish and the kind of stamping that can be put upon it. Local stationers often require their names upon the pencils they sell. Large manufacturing concerns desire to give their customers pencils every one of which shall advertise them. These considerations and others that might be mentioned add to the demand



for varieties. A twin brother to the pencil, and going in company with the pencil wherever the pencil goes, is the rubber, or eraser. This may be a separate article, or it may be something in combination with the pencil. In the large variety of goods presented to the trade by the Joseph Dixon Crucible Company there are as many variations in the way the rubber or eraser is used as in any other line of goods the world over. For instance, there is the ordinary cap, and there is the inserted plug; there are the inserted tablet, the hexagon head, the tablet in metal holder, the fluted holder in nickel cap, the round rubber in nickel cap, the wedge-

shape rubber, and the corrugated rubber tip. The eraser, or rubber, forms a natural and appropriate finish for a pencil, but in many cases the rubber is not desired, and yet a finish is wanted. Many men carry into life the bad habit formed in childhood of chewing their pencils. For such a metal tip is offered, which will resist the onslaughts of the best set of teeth and serve to keep a pencil in presentable shape until it is entirely worn out.

A variation in pencils which I have not yet mentioned, but which the reader doubtless has observed and is waiting for me to speak of, is the



DIXON'S AMERICAN No. 342 CRAYON
GRAPHITE

shape and size of the lead within the cedar casing. Pick up a dozen pencils of different grades and of different makes the first time you are in a stationer's store. You will find the leads vary from those of comparatively small diameter in the hardest pencils to a considerable size in pencils of the softer grade; and from hexagonal leads in certain imported pencils to flat and elliptical leads in special goods. For the most part at the present time the round lead is preferred, and there is good reason for this. With the perfection of modern machinery a round lead can be made of more satisfactory character than a lead of any other type or shape.



956 DIXON'S DIAMOND No. 2

The harder the lead the less need there is of body to it, not only in point of consumption of the lead itself, but also in point of resistance in use. A hard lead is usually whittled to a very fine point, and has strength of substance to stand such use. A considerable quantity of lead to remove, therefore, in sharpening the point would not only be useless, but would annoy the user. The soft lead, on the other hand, is generally used with a blunt point, and so much more is consumed in the writing than with the hard pencils that a considerable body is necessary to provide for this use, and to save the need of constant whittling at the casing. To a certain

extent the diameter of the lead inside of the cedar casing is indicative of the hardness of the lead, although this does not always follow.

I should not forget in passing that there are various kinds of pencils besides cedar pencils, and that leads are supplied for various grades of pocket pencils in which the lead is used movably, instead of being a fixed part of the pencil, as in the cedar pencil. What has been said about the quality of the lead, as to its hardness, diameter, etc., applies in about the same degree to pencils with movable leads as pencils with fixed leads, and



a full assortment of these movable leads is also supplied by the Joseph Dixon Crucible Company.

Cedar is the universal wood used for pencils at the present time. The source of supply is Florida, but so many pencils are made and the demand is so great that the Florida supply is rapidly becoming exhausted, and the day is not far distant when the pencil manufacturers of the world will be compelled to look to some other material or to some other source of supply. The cedar is shipped from Florida in small blocks or slabs a little longer than a pencil in length, a little wider than four or six pencils in width, and of proper thickness. Notwithstanding it is carefully assorted



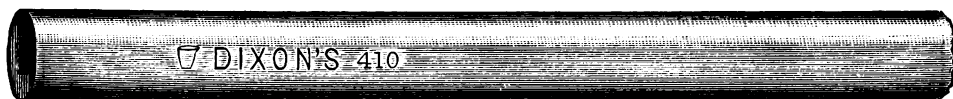
where milled out, the first treatment that it receives when it reaches the Dixon pencil factory is careful selection as to grade; and then follows the dyeing process, in case the wood is to be colored, as already referred to, for certain grades of pencils, and the treatment which takes out the essential oil, and last, but not least, the processes which season it perfectly. We sometimes ask, "What becomes of all the pins?" and an equally appropriate question is, "What becomes of all the pencils?" The Joseph Dixon Crucible Company make upward of 30,000,000 pencils a year. To

the user a single pencil is a unit, to the retailer a dozen is a unit, to the wholesaler a gross is a unit, to the manufacturer the great gross would be the smallest number considered as a unit, whereas a thousand gross is not an unusual quantity to use as a unit.

Strange to say, there is prejudice in the American mind, at times at least, against American products. The American mind, it would seem, is peculiar. At one time, or in one stage of development, or respecting one period of the history of an article or commodity, the American mind is



strongly prejudiced against it. At another the reverse is the case, and too much cannot be said for it. In the one case we want nothing but the foreign product, because that article is good and we esteem the American or domestic article poor, or at least crude. At another time we will have nothing to do with the foreign article, because the American or home-made article, in our estimation, is vastly superior to all others. The Dixon pencils at the outset had all the inborn prejudices of stubborn Americans to contend with, and it was only little by little that this preju-



dice was overcome, and that Americans were brought to know that the home-made or domestic product was not only quite as good, but in many particulars greatly superior to the foreign or imported article. To the credit of the Joseph Dixon Crucible Company be it said that they have always sold their goods as American goods and never have they truckled to the prejudices of their customers by putting on an imported stamp. To-day their advertising goes forth as "An American industry, American materials, American capital, American brains, American labor, and Amer-

ican machinery." Again on their letter-heads we read, "Established 1827. The oldest house in the trade. The largest concern of the kind in the world."

Another distinctively American thing which the Dixon Company have done in introducing their lead pencils has been to commence with the boys and girls—in other words, the schools—in such a way as to cause the present generation of business men to think of a "Dixon" pencil whenever a pencil is mentioned. It took some fifteen or twenty years to accomplish this, but what the young people learned has not been forgotten.



DIXON'S BEST BLUE 350

The works of the Joseph Dixon Crucible Company are conspicuous from the tracks of the Pennsylvania road, and thousands of the readers of this article have got a momentary glance of the extensive front of the building as they have come into or gone out of Jersey City on the road named, in their trips to and from the metropolis. A portion of the sign is suggestive: "Graphite, Plumbago, Black Lead." In it they give to the general public a column of information by contrasting and joining the three names of the one subject. We say "lead pencil," but there is no lead about it. It is graphite, and another name for graphite is plumbago.



METROPOLITAN No 2 740

Here, as in other cases, the company have been obliged to meet the established prejudices of the people by continuing to use some of the terms with which the great mass of the people are familiar, instead of describing their goods definitely and finally by the only correct terms. A few years ago one would pick up a Dixon pencil marked "American Graphite," and say: "Here is something new! This is a graphite pencil instead of a lead pencil." It *was* new—new in the sense of being an American product, and new in the sense of being a pencil correctly named. Plumbago we know of in the arts, but we seldom associate it with anything anal-

agous to a lead pencil, and yet the name has its root in the Latin *plumbum*, lead. Black-lead is a misnomer, but, like some other terms, it will, perhaps, go down the ages in a way to require every school-boy to learn that it is not lead, but something else, and that the term "lead" in the name is altogether out of place.

Graphite may be described as a mineral consisting chiefly of carbon,



the diamond and charcoal being the two other principal forms. Each is precisely alike in nature, but different in molecular construction. Deposits of graphite are met with in various parts of the world, the most famous of those in America being the celebrated graphite mines at Ticonderoga, N. Y., which are owned and operated by the Joseph Dixon Crucible Company. This company own a vast amount of water-power at the outlet of



Lake George into Lake Champlain, where they have a mill six stories high and ninety feet square for the perfecting of graphite.

Formerly in the manufacture of pencils the rough slabs of the mineral graphite were planed smooth and then cut into strips by long, thin blades set together like the blades of a gang-saw. These strips were then cut crosswise into pencil lengths, and in this form looked like tiny iron bars.



One of these pieces was next inserted in a groove channeled in a strip of wood, and then this channel in turn was filled by another piece of wood, and the pencil was finished. The reader will perhaps recall pencils of this kind, having seen them in his boyhood; but long since the process of using graphite in its native state was superseded by methods which enable the manufacturer not only to cheapen the cost and improve the quality, but

also to regulate the product and give it the exact fineness of grade which is desired. A brief reference to the present process of manufacturing pencils, in contrast with the methods that formerly prevailed, will perhaps interest the reader. The graphite is first reduced to an impalpable powder by grinding. Water is then added, and the substance is run through mixers in a fluid state, in order to combine with it whatever quantity of clay may be necessary to give it the grade desired. The more clay, the harder the lead, and *vice versa*. After this mixing has been done, which is performed entirely by machinery, the mass is taken from the mixers



and run through filter-presses in a way to exclude the water and reduce it to a doughy consistency. In order to make the mixing still more thorough, this doughy mass is then passed through dies, by which is meant plates with numerous small perforations, under great pressure, from which the lead—as I shall call it in deference to common phraseology—issues in tiny rods or wires, in general appearance not unlike the lead that is put into the pencil, but, instead of being dry and brittle, being still in a moist or soft condition. The material receives this treatment repeatedly through dies with apertures of different diameters, until finally, when the



mixing has been satisfactorily completed, and the mass is in proper condition, it is passed through a set of dies of the exact diameter of the lead that is to go into the pencil. Deft fingers take the product in this condition, straighten out the leads and cut them to lengths of about three feet. At this stage it is still comparatively soft and pliable. After being cut the leads are allowed to dry, and are then cut to the required pencil lengths and packed in crucibles and burned for several hours, in order to extract the last degree of moisture that remains, and to bring the lead to its final condition. The lead is now ready for inserting in the wooden case.

If the reader will examine his pencil critically, he will find that the cedar case consists of two halves, each equally channeled, and with the line of junction coming against the center of the lead. About the first thing done in the manufacture of the cedar case of a pencil is to get the lead in place. After this the shaping and finishing are attended to. Little slabs of cedar,



two, four or six pencils wide, are grooved, the leads are laid in the grooves of one of these, and then another spread with glue is laid upon it, and the two so put together are put in a press to dry. After this cunningly devised machinery slits the slab into two, four or six pencils, as the case may be, with their sides finished in hexagonal form or round, as the case may be, and these individual pencils, passing through still other machines,



are polished, varnished, stamped and put in cases ready for delivery to the wholesale and retail trade.

On every lead pencil of standard grade turned out by the Joseph Dixon Crucible Company will be noticed the outline representation of a crucible ☞. It is the trade-mark with the company, and, while in a sense it tells its own story, there is connected with it that which will interest the reader, per-



haps, if some particulars are given. The crucible may be described as a vessel or melting-pot for chemical purposes made of fire-clay or other material, such as graphite, and so baked or tempered as to endure extreme heat without fusing. Crucibles are of various shapes, but are well typified by the device printed upon the pencils in question. The crucible in which the leads of pencils are burned in the process of manufacture is unlike the

shape shown upon the pencil, but nevertheless is a crucible. It may be described as a rectangular box of such length as to accommodate the leads as they are made ready for putting into the cedar cases. It is fitted with a lid, and, after all has been made snug, the crucible is put into the furnace and brought to an extreme heat, which temperature is maintained for a considerable period, and then the crucible is lifted out, and, without the lead being touched, is allowed to cool. Without the crucible process it would be impossible to bring the leads to the proper condition, and therefore the name of the company — Joseph Dixon Crucible Company — is not



so inappropriate as many people have supposed; nor is the crucible trade-mark, which is applied to the standard grades of pencils made by this company, at all out of line, for the company have been manufacturing crucibles, stove polish, and other graphite products for nearly 70 years.

"American Graphite" is the chosen term by which the Dixon Company indicate their best grade of pencils. It is virtually a trade-mark with them, and a very excellent one it is. Graphite has its root in the Greek word meaning "to write," and pencils are used for writing. We have the same



root in the word "graphic," and certain pencils contribute to the graphic arts. The same root in turn occurs in "phonographic" and "stenographic," and short-hand writers very generally use pencils, and a large number of them prefer "Dixon's American Graphite" pencils.

Undoubtedly the reader has wondered why I have had nothing to say about the pencil with a colored lead. If the graphite pencil is not a *lead* pencil, possibly the pencil with the colored lead *is*. Such a conclusion would be quite as wide of the truth. Pencils with colored leads are the aristocrats among pencils; they are not made even in the same factory

room with the graphite leads, for fear their bright tints may be discolored in some way by their more sombre brothers. Colored leads, whether red, blue, green, yellow or any other color, are made of wax and other adhesive materials, with red, blue or other coloring pigments, as the case may be. The leads cannot be subjected to the baking and toughening process, like the graphite leads, as the materials would not stand the heat. But in other respects they are made and finished same as the graphite leads.

In past years one of the greatest drawbacks with red and blue and other colored leads was the tendency of the leads to break and crumble. It was next to impossible to put any kind of a point to a colored pencil. If graphite leads were brittle, colored leads were ten times worse. All this trouble and vexation are now done away with, and the Dixon "Best" colored leads are nearly if not quite as strong and tough as the graphite leads. The colors are vivid, and the marks clear and free of the little tail of coloring matter so readily noticed when using inferior colored pencils.

The Dixon "Best" colored leads are placed in wooden cases same as the graphite leads and are also made in "solid" leads covered with paper. With the solid leads there is no cutting away of wood to be done — the pencil is always ready.

Joseph Dixon, whose portrait forms the first illustration in this article, was one of the most prominent inventors and mechanics of his generation. He was born at Marblehead, Mass., in 1799, and died in Jersey City in 1869. He was a singularly self-reliant man, and never failed in his mechanical undertakings. He was always persevering in whatever he undertook until all obstacles were overcome. These characteristics are readily discernible in his features. He is best known as the inventor of the plumbago or black-lead crucible for melting gold, silver, brass, etc., the manufacturer of Dixon's stove polish and of Dixon's American graphite pencils. The Joseph Dixon Crucible Company are the successors of Joseph Dixon, and are the largest manufacturers of graphite products in the world.